

Abstract Submitted
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Probing Topological Superconductors with Elastic Strain Fields

DAVID SCHMELTZER, City College of the City University of New York, AVADH SAXENA, Los Alamos National Lab — We introduce a model for superconductivity in a topological insulator. The response of this system is probed by applying an external stress. We find that the strain field introduces connections in the superconductor and the response of the superconductor is given by the chiral anomaly which is proportional to the disclination density (for s-wave) or dislocations density (for the p-wave) superconductor. This result modifies the sound wave equations. In particular, we find that the core of the disclinations contains the normal matter in a superconductor. The presence of the long-range field induced by the topological response modifies the elastic properties of the solid which can be probed experimentally. The effect of rotating magnetic fields is also considered. Due to the Larmor theorem it is shown that the rotations replace the magnetic field by an effective magnetic field.

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